

Remarks

In the Office Action of July 31, 2003, the Examiner acknowledged a previous election of claims made by Applicant, thereby leaving claims 1-9 remaining for examination.

In that Action, the Examiner rejected claims 3 and 5-9 under 35 U.S.C. § 112, second paragraph for allegedly being indefinite.

Claims 1-5 and 9 were rejected under 35 U.S.C. § 103(a) for alleged obviousness based upon U.S. Patent 4,620,873.

Claims 1, 2, and 9 were rejected under § 103(a) for purported obviousness based upon the '873 patent in view of U.S. Patent 4,318,747.

The Examiner indicated that claims 6-8 would be allowable if rewritten in independent form.

Applicant appreciates the careful and thoughtful review by the Examiner, however, submits that claims 1-5 and 9 are also allowable for the reasons set forth herein.

A. Previous Election

Applicant hereby affirms the previous election of claims 1-9. Applicant reserves its right to pursue prosecution of one or more non-elected claims, i.e. claims 10-71, in subsequent applications. Claims 10-71 have been cancelled.

B. The Rejection of Claims 3 and 5-9 Under § 112, Second Paragraph, Should Be Withdrawn

In support of this ground of rejection, the Examiner asserted:

17. Claims 3 and 5-9 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

18. Regarding Claim 3, it is unclear what is being claimed when zinc, tin, and aluminum are all present in the same zinc alloy in flake form. It is unclear whether the weight percent basis set forth in Claim 3 is with respect to zinc and aluminum or between zinc and tin or with respect to the overall alloy.

19. Regarding Claim 5, it is unclear what is meant by the phrase "on a metals basis." Does this refer to metal in zinc alloy flake or to metal in the paste, which could encompass additional metal to the metal of the flake?

20. Regarding Claim 6, it is unclear what is meant by the phrase "both basis 100 weight percent of said paste." Previously, in this claim, the weight percentage basis is described as being with respect to the alloy. Hence, it is unclear what is being claimed as having a basis of 100 weight percent of the paste.

21. Regarding Claim 7, it is unclear what is meant by the phrase "contains from about 4 to about 5 weight percent of said aluminum, both basis 100 weight percent of said paste." The previous mention of "said aluminum" was made in reference to aluminum of the zinc alloy flake. Hence, it is unclear whether this claim demands that the alloy is to comprise 4 to 5 weight percent aluminum, that the paste is to comprise 4 to 5 weight percent aluminum with all of it being in the alloy flake composition, or that the paste is to comprise 4 to 5 weight percent aluminum with at least some, but not necessarily all, being in the alloy flake composition.

22. Regarding Claim 8, it is unclear what is meant by the phrase "STAPA 4ZnA17." It appears to signify a trademark-like designation which would be indefinite since its meaning may vary over time.

23. Regarding Claim 9, it is unclear what is meant by the phrase "said zinc alloy in flake form is an alloy having at least about 90 percent of the flake particles with longest dimension of less than about 15 microns..." Why is the alloy as opposed to the flake described as having a physical length dimension? Does this mean that the composition of the flake is not uniform and lacks alloy composition for part of its composition? It is unclear what is meant by the phrase "and said composition further contains non-alloyed particulate metal." Does this limitation mean that the paste has metal component that is different from the already claimed zinc alloy flake or does it mean that the flake itself contains metal component that is different from the already claimed zinc alloy composition?

Pages 6-7 of the Office Action.

Applicant hereby offers the following clarifying explanations and submits that claims 3 and 5-9 are in fact, sufficiently definite.

In claim 3, which is dependent from claim 2, all percentages are weight percentages based upon the weight of the alloy flake. Claim 2 recites that the alloy flake comprises greater than 50% zinc and less than 50% of non-zinc alloy metal. Claim 3 specifies the non-zinc alloy metal as tin. Claim 3 continues and recites that the non-zinc alloy contains not more than about 30% of tin, based upon the weight of the alloy flake. This is described on pages 6 and 7 of the specification.

Claim 5, dependent from claim 1, recites that the zinc alloy in flake form comprises a paste containing less than about 15 weight percent aluminum in the flake, on a metals basis. This refers to the basis of the weight percent of aluminum, and that such percent is expressed based upon the total weight of the metals in the alloy flake. This is described on pages 6 and 7 of the specification. Claim 5 continues and recites

that the weight percent of liquid in the paste expressed in terms of the total weight of the paste, is up to about 10 weight percent. This is described on pages 6 and 7 of the specification.

Claim 6, formerly dependent from claim 5, recites two weight percent ranges for components of the paste, i.e., zinc and aluminum. Claim 6 recites that these weight percentages are both based upon the total weight, i.e. "both basis 100 weight percent," of the paste. This is described on pages 7 and 8 of the specification. Claim 6 also recites that the paste contains less than about 15 weight percent aluminum in the alloy flake on a metals basis. Claim 6 continues and recites that the paste also contains up to about 10 weight percent paste liquid based upon the weight of the paste.

Claim 7, also formerly dependent from claim 5, recites two weight percent ranges for components of the paste, i.e., liquid and aluminum. Claim 7 recites that these weight percentages are both based upon the total weight, i.e. "both basis 100 weight percent," of the paste. Claim 7 continues and also recites that the paste contains less than about 15 weight percent aluminum in the alloy flake, on a metals basis. And, claim 7 recites that the paste contains up to about 10 weight percent paste liquid based upon the weight of the paste.

Regarding the Examiner's concern over a perceived inconsistency between claims 7 and the others, please consider the following. Claim 7 recites a particular concentration range of aluminum in the alloy flake, based upon the total weight of the paste. This is described on pages 7 and 8 of the specification. Claim 7 also recites a maximum concentration of aluminum, but based upon the total weight of metals in the alloy flake. Claim 5 also recites a concentration range of aluminum, based upon the total weight of metals in the alloy flake.

Claim 8, formerly dependent from claim 6, recites a designation for the paste known in the art as STAPA 4ZnAl7. This is described on pages 7 and 8 of the application. It appears that the Examiner objects to this designation on grounds that it is "indefinite since its meaning may vary over time." However, it is respectfully submitted that such term is not indefinite because it is clearly and specifically described in the specification, and particularly is with regard to that paste as available at the time of filing of the present application, i.e. January 15, 2002.

Claim 9 is dependent from claim 1 and is directed to a characteristic of the physical form of the zinc alloy in flake form. Specifically, claim 9 recites that at least about 90 percent of the flakes (or "flake particles") have a maximum (or "longest") dimension of less than about 15 microns. Claim 9 further recites that at least about 50 percent of the flakes have a maximum dimension of less than about 13 microns. These dimensional ranges are with regard to the flakes. These aspects are described on page 8 of the specification.

It is submitted that all claims 3 and 5-9 meet the requirements of § 112, second paragraph. Accordingly, that ground of rejection should be withdrawn.

C. The Rejection of Claims 1-5 and 9 Under § 103(a) Should Be Withdrawn

For this ground of rejection, the Examiner contended:

26. Claims 1-5 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Orr USP 4,620,873. Orr teaches a zinc flake containing paint composition that confers corrosion resistance on a substrate to be coated. Orr suggests that the zinc flake may comprise zinc alloying ingredients of magnesium or aluminum. Since the flakes are described as zinc flakes, it would be expected that the amount of alloying magnesium or aluminum is less than 50 weight percent. See Orr (col. 2, lines 5-34; col. 3, lines 42-59; col. 6, lines 5-21; col. 7, line 25 through col. 9, line 15. Orr does not exemplify alloying with magnesium and/or aluminum, but teaches that effective flake compositions may contain these ingredients. It would have been obvious to one of ordinary skill in the art at the time of the invention to fabricate the zinc flake with minor amounts of magnesium and/or aluminum as Orr teaches that effective flake materials may contain these alloying ingredients. With respect to the paste, Orr teaches that the amount of zinc flake may range from 50 to 90 weight percent and that the liquid content may range from 5 to 15 weight percent. It would have been obvious to one of ordinary skill in the art at the time of the invention to fabricate a paste with 85 weight percent zinc as Orr teaches that this amount of zinc flake provides effective coating material. It would have been obvious to one of ordinary skill in the art at the time of the invention to fabricate a paste with from 4 to 8 weight percent liquid as Orr teaches that this amount of liquid provides an effective coating material. Orr teaches that the flake is 300 mesh or less which would be expected to be of sizes less than the claimed sizes of Claim 9. Orr teaches that non-alloyed metal powders may be added to the composition as cathodically active metals. It would have been obvious to one of ordinary skill in the art at the time of the invention to fabricate the composition of Orr with non-alloyed metal powder in order to provide for cathodically active metal in the coating composition.

Pages 8-9 of the Office Action.

Independent claim 1 recites a coating composition adapted for application to, and curing on, a substrate. The composition contains particulate metal in a liquid medium and provides corrosion resistance as a cured coating on the substrate. The particulate metal comprises zinc alloy in flake form which comprises greater than 80 weight percent zinc in the alloyed flake and a balance of less than 20 weight percent of non-zinc alloy metal in the alloy flake.

Applicant respectfully urges that upon closer review, the Examiner will appreciate that the '873 patent fails to render obvious any of the claims at issue. Specifically, the '873 patent is directed to a solvent mix for improving zinc based paints. That is, the '873 patent is directed to particular mixtures of solvents containing certain ether alcohols which are said to improve the corrosion resistance capacity of the paint. In describing the solvent mixtures, a brief description is made of the zinc particles used in the paints. The only reference made to a zinc alloy in the '873 patent is in col. 2, lines 31-33 which is as follows: "zinc or its alloy with metal higher than iron in the electromotive chemical series, such as aluminum and magnesium". There is absolutely no teaching or even suggestion of the proportions of zinc or the alloying metals in the zinc particles. None of the cited passages identified by the Examiner provide any indication as to the proportions or percentage ranges for the zinc or for the alloying metals. The passage cited by the Examiner in col. 3, line 51, of the '873 patent concerning "cathodically-active metals" is merely with regard to the addition of those metals in the paint formulation and not to alloying formulations or zinc based alloys containing such. The cited passage in col. 3 provides no basis for a teaching or suggestion of providing flakes of a zinc based alloy containing particular proportions of zinc and a non-zinc alloying metal as recited in claim 1.

For at least these reasons, the '873 patent fails to teach the subject matter of claim 1, and more significantly, the particular proportions of zinc and a non-zinc alloy metal in the recited zinc alloy flake of claim 1.

Claim 2 specifies that the zinc in the alloy flake is alloyed with one or more of tin, magnesium, nickel, cobalt, and manganese. Although, as the Examiner correctly notes, the '873 patent notes in passing that aluminum and magnesium may be contained in a zinc alloy in the paint formulation of the '873 patent, that patent fails to

provide any teaching or even suggestion of the particular proportions of these materials. There is absolutely no teaching or suggestion of the subject matter of claim 2 in the '873 patent.

Claim 3 depends from claim 2 and specifies that the zinc is alloyed with tin and the zinc alloyed with tin contains not more than about 30 weight percent tin. Again, although the '873 patent notes in passing that zinc may be alloyed with aluminum and magnesium, the '873 patent entirely fails to provide any teaching or suggestion of the particular proportions or percentage ranges for the zinc and aluminum. Furthermore, the '873 patent entirely fails to teach or even suggest alloying zinc with tin as called out in claim 3. For at least these reasons, claim 3 is not rendered obvious by the '873 patent.

Claim 4 recites that the zinc alloy in flake form is a zinc-aluminum-magnesium alloy flake. The '873 patent entirely fails to disclose this tri-component alloy. Furthermore, the '873 patent does not provide any teaching or suggestion of the particular proportions of these metals as recited in claim 4.

Claim 5 is dependent from claim 1 and recites that the zinc alloy in flake form comprises a paste containing less than about 15 weight percent aluminum in the alloy flake, and up to about 10 percent paste liquid. The '873 patent entirely fails to disclose that the zinc alloy in flake form comprises a paste which contains less than about 15 weight percent aluminum in the alloy flake. Furthermore, the '873 patent entirely fails to disclose that the zinc alloy in flake form contains up to about 10 weight percent paste liquid. Additionally, there is absolutely no hint or suggestion of these features in combination in the '873 patent, as recited in claim 5.

Claim 9 was also rejected upon the '873 patent. Claim 9 is dependent from claim 1 and recites that the zinc alloy in flake form is an alloy having at least about 90% of the flake particles with a longest dimension of less than about 15 microns and has at least about 50% of the flake particles with a longest dimension of less than about 13 microns. This particular characteristic of the size population of the flakes is simply not taught or even suggested in the '873 patent. Again, the '873 patent is directed toward solvent mixtures for a paint composition. The only mention of particle size in the '873 patent is in col. 2. There it is noted that when the metallic zinc in the coating

composition is zinc flake, it is preferred that it has a particle size of less than about 300 mesh. The '873 patent is entirely silent with regard to the size distribution of the zinc flakes. Although the patent briefly notes that it is preferred that the zinc flakes have a particle size less than about 300 mesh (which is about 48 microns), the patent fails to teach any aspect of the distribution of sizes below this preferred upper limit. For at least this reason, the '873 patent fails to teach or suggest the subject matter of claim 9. Moreover, the '873 patent does not provide any teaching or suggestion as to the particular proportions of the components in the zinc alloy.

D. The Rejection of Claims 1, 2, and 9 Under § 103(a) Should Be Withdrawn

The Examiner continued and rejected claims 1, 2, and 9 under § 103(a) as obvious based upon the '873 patent to Orr in view of U.S. Patent 4,318,747 to Ishijima et al. Specifically, the Examiner contended:

27. Claims 1, 2, and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Orr USP 4,620,873 in view of Ishijima et al. USP 4,318,747. Orr teaches a zinc flake containing paint composition that confers corrosion resistance on a substrate to be coated. Orr suggests that the zinc flake may comprise zinc alloying ingredients of magnesium and/or aluminum. Since the flakes are described as zinc flakes, it would be expected that the amount of alloying magnesium or aluminum is less than 50 weight percent. See Orr (col. 2, lines 5-34; col. 3, lines 41-59; col. 6, lines 5-21; col. 7, line 25 through col. 9, line 15. Orr does not exemplify alloying with magnesium and/or aluminum, but teaches that effective flake compositions may contain these ingredients. Ishijima teaches using a zinc/aluminum alloy flake as a paint pigment. see Ishijima et al. (Abstract; col. 2, lines 29-50; col. 3, lines 15-43; col. 3, line 66 through col. 4, line 18; and Example 9). It would have been obvious to one of ordinary skill in the art at the time of the invention to use the zinc/aluminum flake of Ishijima et al. with the composition of Orr in order to provide the composition of Orr with metal flakes that provide good gloss properties. Orr teaches that the flake is 300 mesh or less which would be expected to be of sizes less than the claimed sizes of Claim 9, and Ishijima teaches that the size is less than 5 microns, also less than the claimed sizes. Orr teaches that non-alloyed metal powders may be added to the composition as cathodically active metals. It would have been obvious to one of ordinary skill in the art at the time of the invention to fabricate the composition of Orr in view of Ishijima et al. with non-alloyed metal powder in order to provide for cathodically active metal in the coating composition.

The '747 patent describes metal flakes used in coating compositions. The metal flakes are described as flakes of aluminum, copper, zinc, and other metals and

alloys. The only description given in the '747 patent of a zinc alloy is an aluminum-zinc alloy at col. 2, line 33, and a zinc-aluminum alloy at col. 13, lines 28 and 38.

Claim 1 recites a coating composition comprising, in part, zinc alloy in flake form comprising greater than 80 weight percent zinc in the alloy flake and a balance of less than 20 weight percent of aluminum in the alloy flake. Neither the '873 patent to Orr nor the '747 patent to Ishijima et al. teach or suggest this particular feature. As previously noted, Orr describes a solvent mix used for zinc based paints. Although Orr notes in passing the use of a zinc alloy, and one based on aluminum, Orr entirely fails to teach any proportions for the zinc and alloy components. The '747 patent to Ishijima et al. describes various metal flake pigments for use in coating compositions. However, the zinc alloy flake pigments described by Ishijima et al. utilize significantly different proportions of zinc and aluminum than those recited in claim 1. The only reference by Ishijima et al. of the ratio of zinc and aluminum is in Example 9 in which a ratio of 3:1 is noted. This is significantly different and distinguishable from the particular proportions recited in claim 1.

Claim 2 recites a coating composition comprising, in part, zinc alloy in flake form comprising greater than 50 weight percent zinc in the alloy flake and a balance of less than 50 weight percent of non-zinc alloy metal in the flake wherein the zinc alloy in flake form is zinc alloyed with one or more of tin, magnesium, nickel, cobalt, and manganese. As previously noted, Orr merely notes the possible use of a zinc alloy in a solvent mix. Orr entirely fails to teach or describe the particular proportions recited in claim 2 of zinc and one or more of the noted alloying metals. Ishijima et al. fails to remedy the deficiencies of the '873 patent to Orr. Although Ishijima et al. describes certain metal flake pigments, the only reference of proportions of zinc and one or more alloying metals is in Example 9. As previously noted in Example 9 of the '747 patent, zinc and aluminum are utilized in an alloy in a ratio of 3:1. Claim 2 instead, recites a zinc alloy using an alloying metal different than aluminum.

Claim 9 is dependent from claim 1 and recites that the zinc alloy in flake form has at least 90% of the flake particles with a longest dimension of less than about 15 microns and has at least about 50% of the flake particles with a longest dimension of less than about 13 microns. The '747 patent entirely fails to disclose this particular

population or size distribution of its metal flakes. In fact, if one followed the teachings of the '747 patent, which the Examiner does in basing the present rejection thereon, then one would be motivated to provide metal flakes of a size such that 99.5% or more, and preferably, 99.8% or more, pass through a screen having an opening size of 20 microns, and 90% or more and, preferably 95% or more, pass through a screen having an opening size of 5 microns, as described in col. 3, lines 17-21. That is, the '747 patent teaches away from the recitation in claim 9. For at least this reason, claim 9 is patentable over the '747 patent and the '873 patent.

E. Allowed Claims

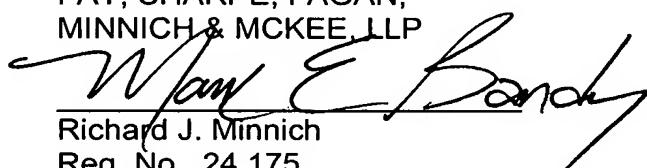
The Examiner indicated that claims 6-8 would be allowed if placed in independent form. Accordingly, Applicant has amended those claims in accordance with the Examiner's suggestions.

F. Conclusion

In view of the foregoing, Applicant hereby requests allowance of claims 1-5 and 9 in addition to allowed claims 6-8.

Respectfully submitted,

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